POTENTIAL REGIONAL ECONOMIC BOUNDARIES IN TEXAS: AN ANALYSIS IN LIGHT OF CURRENT PATTERNS AND LINKAGES IN BUSINESS ACTIVITY

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Introduction

The dynamic Texas economy is constantly changing. The Lone Star State evolved from a dependence on agriculture in its early days to a heavy reliance on oil and gas exploration and production a few decades ago. Currently, Texas is a national leader in corporate locations and expansions and is home to a wide variety of industries, including emerging technology and service sectors which will drive economic growth far into the future.

Amidst this ongoing change, various regions of the state have taken on distinctly different characters. While energy and agriculture are vitally important to many parts of the state, they play only a supporting role in most areas. What is good economic news for one locale can be bad for another.

Texas has also become far more urbanized than in the past, with the largest cities growing increasingly dominant. However, vast geographic areas remain sparsely populated.

In order to deal with issues arising from the diversity in industrial and population bases of the various parts of the state, a number of geographic boundaries have been implemented and utilized over time. While these have proven to be useful, they are in some cases quite dated.

The Perryman Group was recently asked to examine the various regional definitions and offer a perspective on their continued relevance as well as a proposed set of boundaries that is consistent with contemporary conditions. This report sets forth the results of this analysis.

Current Regions: Overview and Initial Comments

There are three primary regional groupings of Texas counties. The Council of Governments Regions (COGs), most of which were originally defined in the mid-1960s. These 24 organizations were established by agreements among public entities in order to (1) address regional issues spanning multiple jurisdictions and (2) administer various federal funding programs that were beginning to be allocated to multi-county areas. Although their functions have changed substantially over time, they remain important facilitators of regional programs.

In addition, the Comptroller of Public Accounts has periodically defined regions for analysis and service purposes. Initially, there were six such areas; they were subsequently expanded to 10 and then to the present 13. In all cases, these regions were either conterminous with the COGs or the aggregation of two or more COGs. For example, the Capital Region and the Capital COG are conterminous, while the High Plains Region consists of the Panhandle and South Plains COGs.

The third major grouping is the Local Workforce Development Areas (LWDAs). There are 28 such areas. With only minor

exceptions (e.g., Starr County is shifted from the South Texas COG to the Lower Rio Grande Valley LWDA), these areas are comprised of the 24 COGs with four individual populous counties (Cameron, Dallas, Tarrant, and Travis) being served separately. Some analysis accompanied the designation of these areas (which occurred in the early 1990s) in which it was concluded that the COG boundaries were generally acceptable.

Thus, for all practical purposes, all of the major regional constructs currently in use are based on multi-county alliances that were formed about 40 years ago. Obviously, there have been substantial changes in business patterns over the past four decades. As noted, Texas has experienced increased urbanization, the emergence of a vibrant technology sector, a decline in the relative importance of oil and agriculture, and the rise of the "service economy," to name but a few.

The existing definitions pre-date the construction and opening of the Dallas/Fort Worth International Airport, the oil crises of the 1970s and 1980s, the first lunar landing, and the widespread use of personal computers and cellular telephones. Even fax machines were rare, and 8-track tapes were common. Transportation arteries were quite different; virtually every aspect of transportation, communications, utilities, and financial services was heavily regulated, and the global economy was not a major factor in domestic performance. The entire concept of regionalism was in its infancy, and the analytical approach to regional definition had not been significantly explored.

These and myriad other phenomena suggest that a reexamination of regional linkages is a worthwhile endeavor. This task is

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complicated by the sheer size and complexity of the Texas economy. The state has urban counties with millions of residents, as well as three of the four least-populous counties in the nation (Loving, King, and Kenedy). It has mountains, deserts, lake regions, and beaches; it has areas dominated by agriculture, minerals, a variety of technologies, and tourism. Its combination of vast geography and concentrated activity in a few metropolitan regions poses particular difficulties. Nonetheless, through a multi-faceted investigation, it is possible to define reasonable boundaries.

The Perryman Group's Perspective

TPG is an economic research and analysis firm based in Waco, Texas. The firm has more than 20 years of experience in analyzing the Texas economy and assessing the economic impact of corporate expansions, regulatory changes, real estate developments, and myriad other types of events affecting business activity. The key models used in this study, including the Texas Econometric Model and the Texas Multi-Regional Impact Assessment System, were developed in the early 1980s and have been continually refined, updated, and expanded since that time.

These and other TPG systems have been used in hundreds of public and private sector applications and enjoy an excellent reputation for accuracy and reliability. In particular, the models have played a key role in numerous major policy initiatives in Texas (including, among others, judicial reforms, trucking deregulation, electric deregulation, tax policy, economic development incentives, telecommunications deregulation, and transportation funding mechanisms). In addition, TPG has produced regular forecasts for

Texas and its various regions over an extended period and has been involved in observing and at times impacting the evolution of regional patterns and interactions on an ongoing basis.

TPG has conducted hundreds of economic analyses for the US and Texas economies as well as all Texas metropolitan areas, regions, and counties. Studies have been performed for hundreds of clients including many of the largest corporations in the world, governmental entities at all levels, educational institutions, major health care systems, utilities, and economic development organizations. In particular, the firm has completed dozens of studies which track the interactions of activity across various counties in Texas (including applications in health care, manufacturing, transportation, retail sales, employment, environmental policy, petroleum, and insurance), and maintains an extensive set of models and data that is ideally suited to the current task.

As noted, The Perryman Group analyzed three distinct geographical divisions:

- Council of Governments Regions
- Comptroller's Uniform Service Regions, and
- The Local Workforce Development Areas

These divisions were implemented at various points in time for differing purposes. The following sections offer a more detailed look at the regional definitions and their purposes. In addition, the Metropolitan Statistical Areas as defined by the US Bureau of the Census are also considered because they play some role in the decision process related to boundaries.

These areas and the counties which fall within each are listed in the County Classification table located in Appendix C of this report.

Council of Governments Regions

In 1954, the federal government offered financial assistance to cities that developed planning agencies. This federal funding, provided by the US Department of Housing and Urban Development (HUD), was later important to implementing COGs, which were authorized by the state Regional Planning Act of 1965.

By 1969, there were 21 COGs; the number eventually grew to 24. Boundaries of regional councils are based on the 24 state planning

regions designated and reviewed by the governor. The Omnibus Budget Reconciliation Act of 1981 (OBRA) eliminated most of the federal support for the regions with the end of HUD funding. However, COGs still perform a number of services with financial support from local and state governments.

COGs are voluntary associations of local governments that deal with planning needs that cross boundaries of individual local governments. The governing body in each COG includes local elected officials of cities and counties.

Federal funding for COGs is declining, though federal grants do still go to COGs both directly and indirectly through state agencies. State funds come from various state agencies and contribute to some of the major programs such as solid waste management, aging programs, criminal justice planning, law enforcement training, and 911 emergency communications. Local funding comes from dues paid by member governments, contributions, and revenues for miscellaneous services.

The 2006 COG expenditure report by the Texas Comptroller indicates that over $71 billion was spent by all COGs combined. Over $19 billion was spent on inter-governmental payments, over $17 billion was spent on labor costs, public assistance accounted for about $24 billion, over $5 billion was spent on highway construction, almost $2 billion was spent on operating expenses, and capital outlays made up almost $312 million.

Originally, councils were responsible for planning area development including assisting member governments in meeting federal mandates regarding water, sewer, open space, and housing. The

services currently offered by COGs vary but may include a number of services through the cooperation of governments, the private sector, and state and federal partners such as the following:

- Planning and implementing regional homeland security strategies;
- Operating law enforcement training academies;
- Providing cooperative purchasing options for governments;
- Managing regional-wide services to the elderly;
- Maintaining and improving regional 911 systems;
- Promoting regional economic development;
- Operating specialized transit systems; and
- Providing management services for member governments.

In addition, while varied, many COGs offer planning for economic growth, water supply and water quality, air quality, transportation, emergency preparedness, and coordinated delivery of various social services. Also, councils may maintain databases on regional population, economic, and land-use patterns.

In 2005, the Strategic Directions Committee of the Texas Association of Regional Councils indicated that during the next two decades the general purpose of COGs will change due to

- Substantial reductions in federal domestic assistance;
- State government cost shifts to the local and regional levels;

- Taxpayer and state government-imposed limitations on local government revenue raising capacities;
- Loss of the "baby boom" generation of seasoned governmental executives and managers;
- Local and regional workforces with a high school education or less;
- Additional polarization among urban, suburban, and rural interests with suburban and rural interests more closely linked than in the past due to demographic and economic growth trends as well as several decades of redistricting of congressional and state representative districts; and
- A rise in service demand, more prominent in major urban areas for social services, public-supported health care, and public transportation.

A map of the current COG regions may be found on page 22 of this report.

Comptroller's Uniform Service Regions

The Texas Comptroller's office tracks regional economic trends and growth patterns for 13 regions. These regions were formed in 1991 in order to "maximize the efficient and proper provisions of services by the state to its citizens." The divisions were recently modified from 10 to 13 after updating economic analysis. As noted earlier, these regions either coincide with COG regions or are a combination of two or more of the COG regions.

A map of the current comptroller's regions follows.

Comptroller Regions

Local Workforce Development Areas

In 1993, the Texas Legislature passed Senate Bill 642 (SB642) requiring the Texas Workforce Investment Council to recommend local workforce development areas (LWDAs) for the state. LWDAs largely followed the existing Governor's substate planning regions (COGs) with some exceptions that were designated or redesignated between 1995 and 2001. There are currently 28 LWDAs consisting essentially of the 24 COGs as well as a few urban counties (Cameron, Dallas, Tarrant, and Travis) that are separate regions.

In addition, SB642 created the Texas Council on Workforce and Economic Competitiveness (TCWEC), voluntary Local Workforce Development Boards, and a local and state delivery system for

workforce services. The TCWEC was responsible for joining state economic development, education, and workforce development agencies.

In 1995, through House Bill 1863 (HB1863), workforce programs were merged into a new agency, the Texas Workforce Commission (TWC). The purpose of the TWC was to eliminate inefficient fragmentation of employment and training programs through the consolidation of related programs into one state agency. The TWC coordinates and manages all programs and, where feasible, turns them over to locally controlled Boards to implement.

The TWC brought together 28 workforce programs from 10 different agencies. Community leaders voluntarily were able to take charge of developing workforce solutions through Local Workforce Development Boards (Boards). Each Board is made up of business leaders in the community as well as representatives from labor, education, community organization, economic development, vocational rehabilitation, public employment, and human services agencies. The boards plan and implement integrated workforce services for their areas through one-stop Texas Workforce Centers. There are 256 one-stop Texas Workforce Centers and satellite offices.

These Centers provide services such as

- Determination of individuals' eligibility for programs;
- Initial assessment of skill levels, aptitudes, abilities, and support service needs;

- Job search and placement assistance as well as career counseling when needed;

- Information regarding programs, costs, employment statistics and how the workforce area is performing, and claims for Unemployment Insurance;

- Individual counseling and career planning;

- High-growth, high-demand industry skills training;

- On-the-job training;

- Programs that combine workplace training with related instruction;

- Training programs operated by the private sector;

- Skills upgrading and retraining;

- Entrepreneurial training;

- Job readiness training;

- Referrals to Adult Basic Education and literacy activities; and

- Customized training conducted with a commitment by an employer or group of employers to employ an individual upon successful completion of training.

The TWC allocates funding from block grants received under the Workforce Investment Act, Temporary Assistance for Needy Families (TANF) Choices, Welfare-to-Work, Food Stamp employment and training, and subsidized child care services to LWDAs to support these activities. The 2006 TWC annual report of programs indicates that the TWC annually allocates about $800 million for Boards to deliver workforce services.

Local Workforce Development Boards

1 - Panhandle
2 - South Plains
3 - West Central
4 - North Texas
5 - Texoma
6 - North East
7 - North Central
8 - Tarrant County
9 - Dallas County
10 - East Texas
11 - Upper Rio Grande
12 - Permian Basin
13 - Concho Valley
14 - Central Texas

15 - Heart of Texas
16 - Brazos Valley
17 - Deep East Texas
18 - Middle Rio Grande
19 - Alamo
20 - Capital
21 - Rural Capital
22 - Gulf Coast
23 - South East Texas
24 - Golden Crescent
25 - South Texas
26 - Coastal Bend
27 - Lower Rio Grande
28 - Cameron County

Metropolitan Statistical Areas

As noted, the US Bureau of the Census defines Metropolitan
Statistical Areas. Much of the data reported and analyzed by the
Census uses the MSA definitions, which are based on rigid
decision rules regarding interaction among counties. A map of the
current MSA definitions follows.

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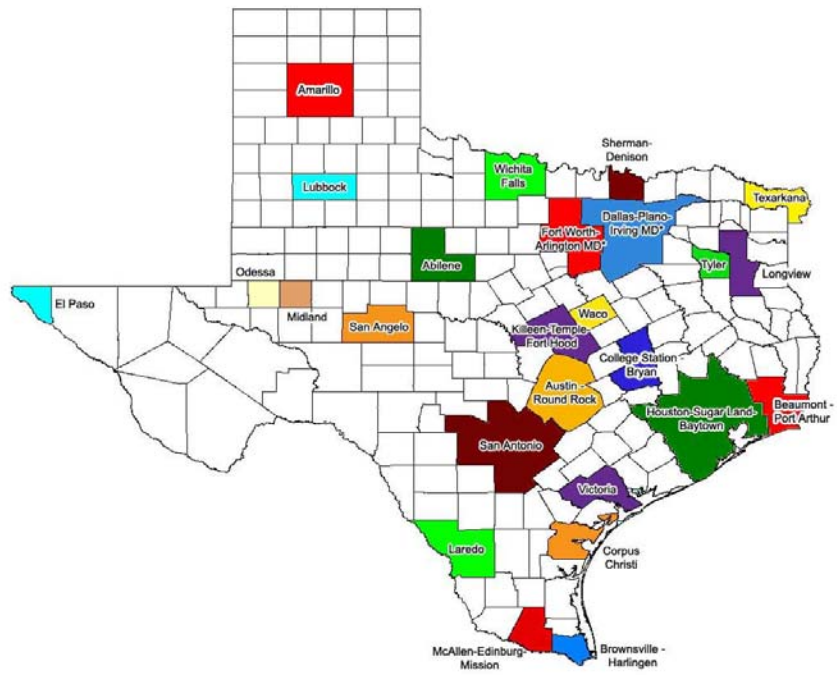
Metropolitan Statistical Areas

Methods Used to Assess the Validity of Various Boundary Taxonomies

In order to analyze the relationships among communities and other areas across the state, The Perryman Group first engaged in an extensive data review. Once this sizable database was assembled, TPG built and tested numerous models depicting the economic linkages between counties. TPG's existing models were also utilized in this effort. Results were then compared to existing regional boundary definitions to determine the extent to which they reflect current dynamics.

Initial Observations and Caveats

Before discussing specific methodologies, some preliminary observations and characterizations are in order. Initially, while it would be preferable from an analytical perspective to have regions which more accurately reflect the underlying economy, any change of necessity involves costs and benefits. The gains from adopting more cohesive regions would be offset to some extent by the expense and inconvenience of changes in protocols that have been in place for an extended period of time.

Moreover, there may be institutional barriers to change given the large number of programs administered through the existing structures. The current areas are contiguous and generally have historical linkages, with many of the counties continuing to be relatively integrated. Thus, there may well be valid, non-economic

reasons to retain the present regional structure or only partially implement the suggested modifications.

It should further be observed that economies are dynamic and constantly changing; there is no set of geographic boundaries that will perpetually define appropriate regions. Similarly, interactions among economic agents (suppliers, producers, consumers, etc.) literally occur on a global basis, with the smallest rural communities having some degree of dependence on factors spanning multiple countries; there are no "bright lines" to clearly delineate where one area stops and another starts.

Even if there were such definitive regions, it is highly unlikely they would follow the county lines, many of which reflect the long-forgotten whims of surveyors and landowners well over a century ago or the meandering paths of the many rivers that flow through Texas. Consequently, "perfect" regions do not exist, and any attempt to define workable borders will inevitably involve a certain level of subjectivity. As a result, any "map" will be, at best, a reasonable approximation, and practical and political considerations may legitimately affect the determination of the most useful structure. The current effort is designed to provide a realistic set of regions within an economic context with full cognizance of the limitations noted above.

Methodology

In performing this assessment, The Perryman Group used numerous analytical methods in order to provide objective information to facilitate discussion. The approach attempted to

account for such factors as (1) the tendency of economic activity to organize itself into "clusters" of industries with complex supplier and customer relationships; (2) commuting patterns which indicate the interdependence of areas in terms of employment and residence; (3) retail and service patterns; and (4) evolving demographic characteristics.

Because there are no "bright lines" and definitive answers, TPG employed a variety of techniques to gain the maximum level of information on which to base various decisions. In many respects, the analysis involved detailed consideration of multiple factors on a county-by-county basis. Among the elements of the approach were the following.

1. **An analysis of the potential export and import linkages across counties was conducted.** By examining the needs and productive capacities of various areas, the trade possibilities can be identified. This approach has long been used to assess the linkages among areas for such applications as (1) estimating the prospective benefits of trade agreements and (2) projecting the gains from infrastructure investments that enhance accessibility across areas. It is analytically equivalent to examine the extent to which one county relies on another for various needs or to define the suppliers and customer patterns for industry clusters.

2. **A number of income, employment, and population ratios across counties were evaluated.** Calculations such as the ratio of employment to population, the relationship between income by place of work and place

of residence, and trends in these patterns over time can reveal linkages across economies. For example, if one county has a high ratio of employment to population relative to surrounding counties, it suggests interdependence. (Care must be taken in such analysis; a single large facility in a relatively small county—such as Pantex in Carson County—can yield comparable results.) Similarly, a ratio of income by place of work to income by place of residence can be used to identify counties that provide jobs to surrounding areas (as well as the converse). Moreover, trends in such relationships can provide evidence regarding the evolution of such interrelationships.

3. **Using the appropriate geographic submodels for each of the existing COG regions and Metropolitan Statistical Areas (MSAs) within the state, simulations of the Texas Econometric Model were performed to examine projected industrial patterns over the period through 2030.** This information is useful in investigating current and anticipated performance in each area, thus allowing reasonable inferences about integration and declining or expanding relative importance. In some instances, county-level simulations were conducted as well.

4. **Simulations of the economic impact of selected types of economic activity were implemented using county and regional submodels of the Texas Multi-Regional Impact Assessment System.** By examining the relative "multiplier effects" across contiguous regions, it is possible

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to make reasonable inferences regarding the extent to which they are interrelated. For example, about two-thirds of the "spinoff" activity from a major cheese processing plant in Dallam County (in the far northwest Texas Panhandle) is captured by the Amarillo MSA.

5. **An assessment of demographic data from the US Census Bureau was completed.** A review of demographic trends and the evolving classification of metropolitan areas, combined statistical areas, and micropolitan areas reveals insights into changing economic relationships. Additionally, segments that are experiencing ongoing population declines or growth rates well below other parts of the state are becoming a smaller part of the economy (these patterns can also be observed in economic series such as employment, output, and income). This type of information can suggest opportunities to create greater efficiencies through merging various functions.

6. **In some instances, highway and railway maps were used to determine relevant traffic patterns.** This approach is often a beneficial supplement to the quantitative methods. For example, in a large, sparsely populated county dominated by agricultural activity, the location of communities and the roadways connecting them to major cities which provide needed goods and services to local residents is the key source of linkage to other parts of the state.

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All of these factors were used to define reasonably homogenous economic regions. The results of the investigation are summarized in the following section.

Results of the Analysis: Updated Regions

The process described above yielded a set of 17 economic regions defined in the accompanying table and map. Some of these areas are identical to the COG regions used at present; others involve the merging of existing regions; and there are numerous instances in which one or more counties are shifted from one region to another.

As noted earlier, the Comptroller of Public Accounts currently maintains 13 service regions, many of which are the sum of existing COG regions. If the organizational scheme proposed herein were adopted, the Comptroller's office could, if desired, maintain a similar 13-area structure (although with different counties in many of the regions) by combining

- the new Heart of Texas, Central Texas, and Brazos Valley regions,
- the Panhandle and the South Plains regions, and
- the new Lower Rio Grande Valley and South Texas regions.

This approach would be analogous to the current structure, but would be more reflective of contemporary linkages.

Proposed Updated Regions

A map of the proposed updated regions (as well as the current definitions) illustrates the key changes The Perryman Group's analysis indicates are appropriate.

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Updated and Current Region Comparison
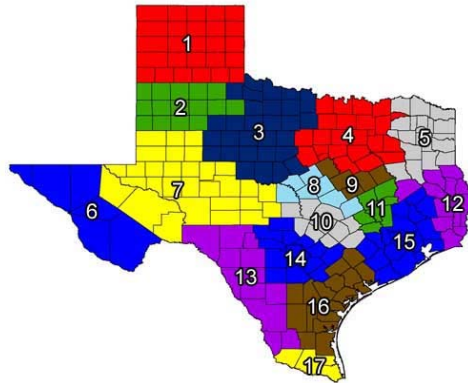
Updated Regions

1 - Panhandle
2 - South Plains
3 - North West Texas
4 - North Central Texas
5 - North East Texas
6 - Upper Rio Grande
7 - West Texas
8 - Central Texas
9 - Heart of Texas
10 - Capital
11 - Brazos Valley
12 - South East Texas
13 - South Texas
14 - Alamo
15 - Gulf Coast
16 - Coastal Bend
17 - Lower Rio Grande

Current Regions

1 - Panhandle
2 - South Plains
3 - West Central Texas
4 - North Texas
5 - North Central Texas
6 - Texoma
7 - North East Texas
8 - East Texas
9 - Rio Grande
10 - Permian Basin
11 - Concho Valley
12 - Central Texas
13 - Heart of Texas
14 - Capital
15 - Brazos Valley
16 - Deep East Texas
17 - Middle Rio Grande
18 - Alamo
19 - Golden Crescent
20 - Gulf Coast
21 - South East Texas
22 - Coastal Bend
23 - South Texas
24 - Lower Rio Grande

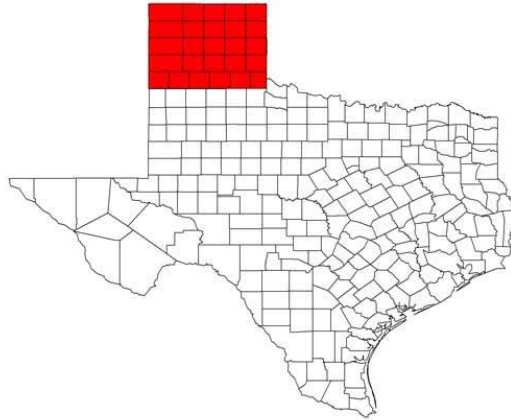A list of the counties included in each updated region follows.

Updated Region	Counties Included
Panhandle	Armstrong, Briscoe, Carson, Castro, Childress, Collingsworth, Dallam, Deaf Smith, Donley, Gray, Hall, Hansford, Hartley, Hemphill, Hutchinson, Lipscomb, Moore, Ochiltree, Oldham, Parmer, Potter, Randall, Roberts, Sherman, Swisher, and Wheeler
South Plains	Bailey, Cochran, Crosby, Dickens, Floyd, Garza, Hale, Hockley, King, Lamb, Lubbock, Lynn, Motley, Terry, and Yoakum
North West Texas	Archer, Baylor, Brown, Callahan, Clay, Coleman, Comanche, Cottle, Eastland, Fisher, Foard, Hardeman, Haskell, Jack, Jones, Kent, Knox, Mitchell, Nolan, Runnels, Scurry, Shackelford, Stephens, Stonewall, Taylor, Throckmorton, Wichita, Wilbarger, and Young
North Central Texas	Collin, Cooke, Dallas, Delta, Denton, Ellis, Erath, Fannin, Grayson, Henderson, Hill, Hood, Hunt, Johnson, Kaufman, Montague, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, Van Zandt, and Wise
North East Texas	Anderson, Bowie, Camp, Cass, Cherokee, Franklin, Gregg, Harrison, Hopkins, Lamar, Marion, Morris, Panola, Rains, Red River, Rusk, Smith, Titus, Upshur, and Wood
Upper Rio Grande	Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, and Presidio
West Texas	Andrews, Borden, Coke, Concho, Crane, Crockett, Dawson, Ector, Gaines, Glasscock, Howard, Irion, Kimble, Loving, Martin, Mason, McCulloch, Menard, Midland, Pecos, Reagan, Reeves, Schleicher, Sterling, Sutton, Terrell, Tom Green, Upton, Ward, and Winkler
Heart of Texas	Bosque, Falls, Freestone, Limestone, and McLennan
Central Texas	Bell, Coryell, Hamilton, Lampasas, Milam, Mills, and San Saba
Brazos Valley	Brazos, Burleson, Grimes, Leon, Madison, Robertson, and Washington
Capital	Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson
South East Texas	Angelina, Hardin, Houston, Jasper, Jefferson, Nacogdoches, Newton, Orange, Sabine, San Augustine, Shelby, and Tyler
Gulf Coast	Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Polk, San Jacinto, Trinity, Walker, Waller, and Wharton
Coastal Bend	Aransas, Bee, Brooks, Calhoun, DeWitt, Duval, Goliad, Jackson, Jim Wells, Kenedy, Kleberg, Lavaca, Live Oak, McMullen, Nueces, Refugio, San Patricio, and Victoria
Alamo	Atascosa, Bandera, Bexar, Comal, Frio, Gillespie, Gonzales, Guadalupe, Karnes, Kendall, Kerr, Medina, and Wilson
South Texas	Dimmitt, Edwards, Jim Hogg, Kinney, LaSalle, Maverick, Real, Uvalde, Val Verde, Webb, Zapata, and Zavala
Lower Rio Grande Valley	Cameron, Hidalgo, Starr, and Willacy

The current LWDAs include four individual counties. Since these are large, urban counties that are clearly critical to the surrounding regions, it is presumed that the separation of these counties is primarily a function of administrative efficiency given their relative population sizes. Thus, in addition to the current single-county areas, it might be useful to consider Harris and Bexar counties as well. Because El Paso County constitutes virtually all of the population in its region, a separate LWDA would not seem appropriate in the Upper Rio Grande area. Similarly, Hidalgo County is more populous than Cameron County, but the location of the two likely makes it more efficient to retain the current LWDA.

A brief discussion of each updated region is presently offered.

Region 1: Panhandle

Updated Region
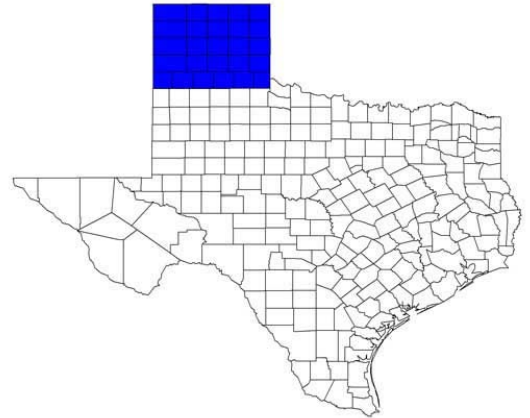
Current Region

Armstrong, Briscoe, Carson, Castro, Childress, Collingsworth, Dallam, Deaf Smith, Donley, Gray, Hall, Hansford, Hartley, Hemphill, Hutchinson, Lipscomb, Moore, Ochiltree, Oldham, Parmer, Potter, Randall, Roberts, Sherman, Swisher, and Wheeler

This region is identical to the current Panhandle COG Region. The Amarillo MSA, which has been expanded to include additional counties over time by the Census Bureau, exhibits the characteristics of a central city to the area. The rural counties are primarily agricultural in nature (with some mining), with Amarillo providing the bulk of supporting activity. It is also apparent that many of the residents of the surrounding counties work in Amarillo. Amarillo and Lubbock are distinct in their economic base and each exhibits the characteristics of supporting a surrounding area; thus, it was determined that two separate regions were appropriate from an economic perspective.

Region 2: South Plains
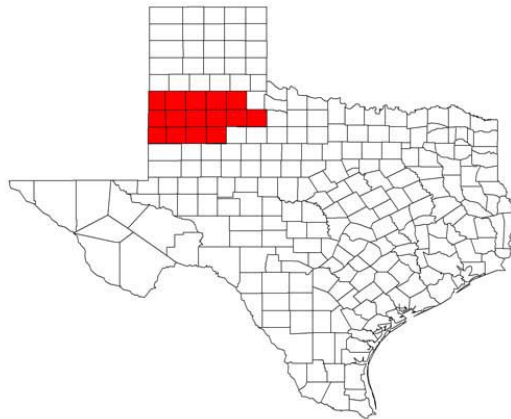
Updated Region
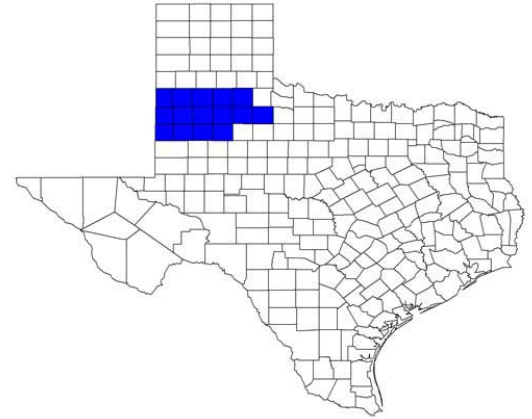
Current Region

Bailey, Cochran, Crosby, Dickens,
Floyd, Garza, Hale, Hockley, King,
Lamb, Lubbock, Lynn, Motley, Terry,
and Yoakum

The South Plains Region is also identical to the current COG. Lubbock is the central city with an expanding MSA definition and, like Amarillo, has the capacity to service the needs of the agricultural and mineral interests in the surrounding area. The delineation between the two regions was determined to some extent by proximity and transportation access, as both can adequately meet the basic needs of nearby populations. While Amarillo has a greater concentration of diverse manufacturing, Lubbock has a focus on higher education (primarily Texas Tech University) and export-oriented health care. These characteristics define some elements of spinoff activity in other sectors.

Region 3: North West Texas
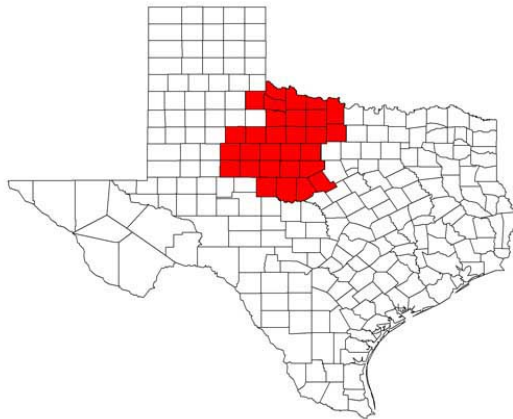
Updated Region
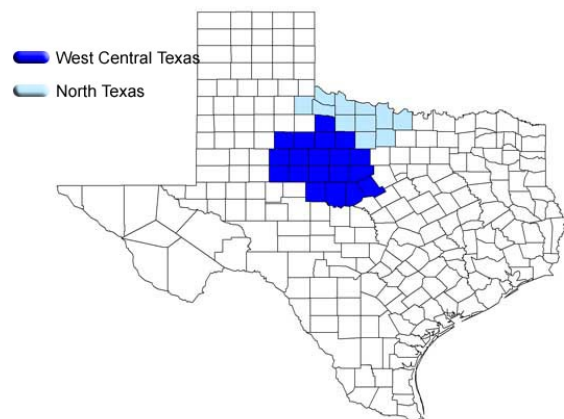
Current Regions

West Central Texas
North Texas

Archer, Baylor, Brown, Callahan, Clay, Coleman, Comanche, Cottle, Eastland, Fisher, Foard, Hardeman, Haskell, Jack, Jones, Kent, Knox, Mitchell, Nolan, Runnels, Scurry, Shackelford, Stephens, Stonewall, Taylor, Throckmorton, Wichita, Wilbarger, and Young

This region consists essentially of the current North Texas and West Central Texas COGs. The one exception is that Montague County has been moved to the North Central Texas Region (see subsequent discussion). This area is an important center of agricultural and mineral activity. The decision to merge these areas stemmed from factors such as (1) the North Texas COG Region has exhibited a declining trend in population in recent years and now represents less than 1% of the state by most measures, (2) the West Central Texas COG Region is also exhibiting stable to declining population, and (3) the relative attraction of individual rural counties is somewhat blurred between the Abilene and Wichita Falls MSAs. Trends in several indicators also suggest that other

counties in the eastern part of the region are likely to become more dependent on the Dallas-Fort Worth area in the coming years.

Region 4: North Central Texas
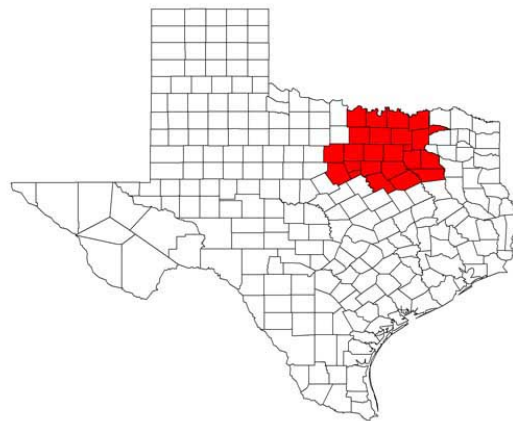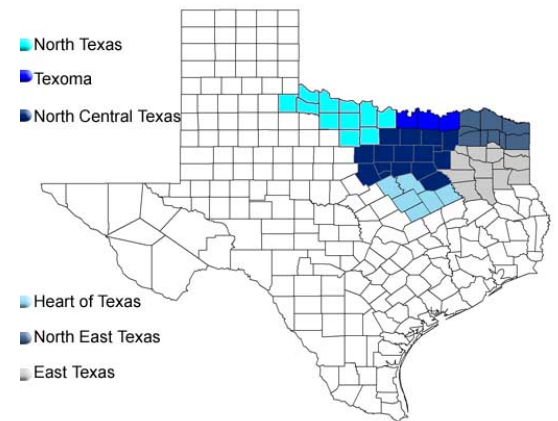
Updated Region   **Current Regions**

Collin, Cooke, Dallas, Delta, Denton, Ellis, Erath, Fannin, Grayson, Henderson, Hill, Hood, Hunt, Johnson, Kaufman, Montague, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, Van Zandt, and Wise

The North Central Texas Region is dominated by the Dallas-Fort Worth Metroplex. The proposed region includes the current North Central Texas COG Region, the current Texoma COG Region (Cooke, Fannin, and Grayson counties), Montague County (from the current North Texas COG Region), Delta County (from the current North East Texas COG Region), Henderson and Van Zandt counties (from the current East Texas COG Region), and Hill County (from the current Heart of Texas COG Region). This significant expansion of the current designation reflects the substantial growth of the Dallas-Fort Worth area in recent years and its increasing influence over surrounding counties.

The three counties in the Texoma COG, which includes the Sherman-Denison MSA, do not generate sufficient retail, service,

and industrial support activity to constitute a distinct economic region. Moreover, the analysis indicates that there is a notable net influx of workers from these counties into the Dallas-Fort Worth metropolitan area (primarily to Collin and Denton counties). Additionally, while Sherman and Denison are meaningful cities, they are dominated by cities in the northern Metroplex (such as Plano, Frisco, Richardson, and Denton) in providing needed support to surrounding areas. Finally, the total population of the Texoma COG represents less than 1% of the aggregate for Texas.

Delta County is small and predominately agricultural and exhibits substantial linkages to the northeastern segment of the Metroplex. Additionally, the Census Bureau has recently moved the county into the Dallas-Plano-Irving Metropolitan Division. Thus, including it within the region will help to maintain consistency between region and metropolitan area data. Hill County continues to have interrelationships with the Waco area, but it clearly has more extensive connections with the Metroplex. Similarly, Van Zandt and Henderson counties in the East Texas COG and Montague County in the North Texas COG are dependent on the Dallas-Fort Worth urban center for much of their support activity and employment for local residents. Henderson County was included in the Dallas-Fort Worth area definitions by the Census Bureau at one point and, given current patterns, will likely be again in the future.

Region 5: North East Texas
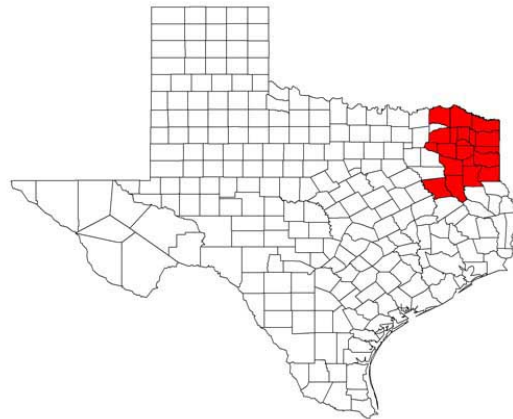
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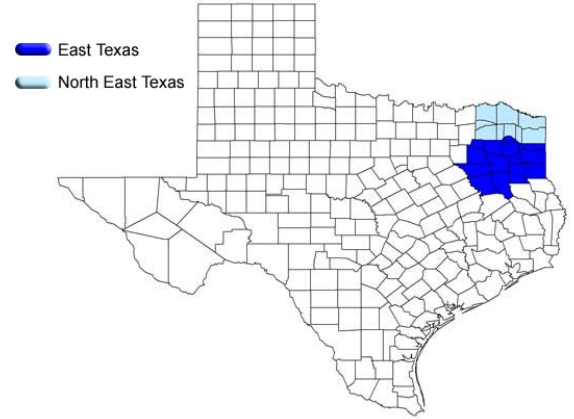
Current Regions

East Texas
North East Texas

Anderson, Bowie, Camp, Cass,
Cherokee, Franklin, Gregg, Harrison,
Hopkins, Lamar, Marion, Morris,
Panola, Rains, Red River, Rusk, Smith,
Titus, Upshur, and Wood

This proposed region encompasses the current North East Texas
COG and East Texas COG areas with the exception of the three
counties that were reassigned to North Central Texas (Delta,
Henderson, and Van Zandt). The decision to combine the two
existing areas was based on the interactions of activity across the
two existing area definitions. In particular, the Longview-Marshall
and Tyler MSAs provide much of the industrial and retail/service
support to the more northern counties.

Region 6: Upper Rio Grande

Updated Region **Current Region**

Brewster, Culberson, El Paso,
Hudspeth, Jeff Davis, and Presidio

This region is identical to the current Upper Rio Grande COG Region. It is comprised of the El Paso MSA (El Paso County) and several nearby counties for which El Paso serves as the most accessible venue for retail, service, and other support operations. El Paso represents over 96% of the population in this area, as well as almost 98% of local economic activity. In addition, El Paso serves as a net exporter of basic business support to a substantial segment of Mexico and New Mexico.

Region 7: West Texas
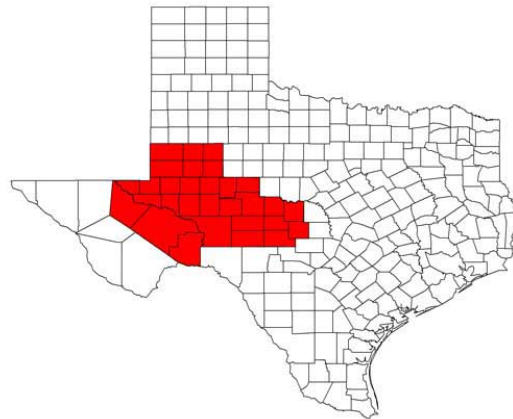
Updated Region
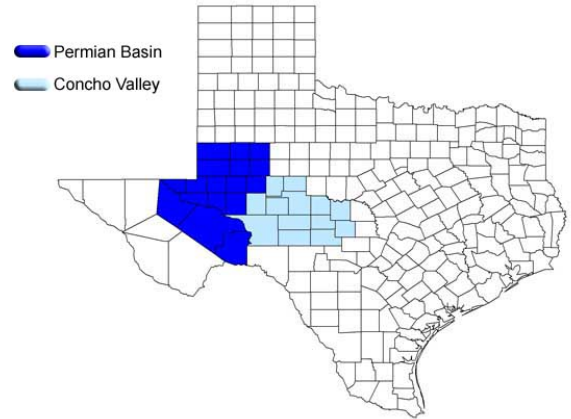
Current Regions

Permian Basin
Concho Valley

Andrews, Borden, Coke, Concho, Crane, Crockett, Dawson, Ector, Gaines, Glasscock, Howard, Irion, Kimble, Loving, Martin, Mason, McCulloch, Menard, Midland, Pecos, Reagan, Reeves, Schleicher, Sterling, Sutton, Terrell, Tom Green, Upton, Ward, and Winkler

This region includes all of the counties in the current Permian Basin COG and Concho Valley COG regions. The decision to combine the two existing regions was based on such factors as

- the Concho Valley area has a stable to slightly declining population and comprises only 0.6% of Texas residents, 0.5% of personal income, and 0.4% of output;

- some counties in the Permian Basin are providing a greater degree of support for the agricultural sector than the San Angelo MSA (Tom Green County, the principle population center of the Concho Valley Region);

- several counties in the Concho Valley Region are experiencing increased mineral activity which is supported

by firms in the Midland and Odessa MSAs (Midland and Ector counties, respectively); and

- Midland and Odessa are becoming the dominant retail and service providers for some of the counties in the Concho Valley, thus blurring any distinctions that may have previously existed.

The current Permian Basin COG Region is clearly more dominated by mineral interests, but the influence of the Midland and Odessa areas is expanding beyond traditional boundaries.

Region 8: Heart of Texas
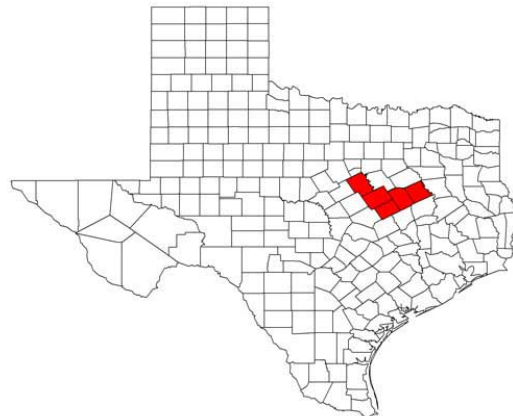
Updated Region
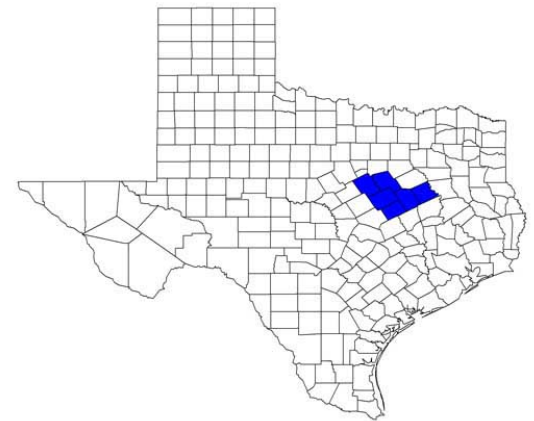
Current Region

Bosque, Falls, Freestone, Limestone, and McLennan

The proposed Heart of Texas Region is essentially the current Heart of Texas COG Region, with the exception of Hill County being transferred to the North Central Texas Region (see prior discussion). The Waco MSA (McLennan County) remains the center of activity for several surrounding counties. Because Waco is adjacent to the Killeen-Temple MSA, consideration was given to combining the Heart of Texas and Central Texas COG regions. This approach was rejected because (1) both MSAs show definitive evidence of being independent and supporting a distinct set of counties; (2) the key industries in the two areas are quite different; and (3) ongoing trends indicate that the Heart of Texas area is more likely to be influenced by the Dallas-Fort Worth area in the future, while Central Texas is becoming more integrated with the Austin-Round Rock urban center.

Region 9: Central Texas
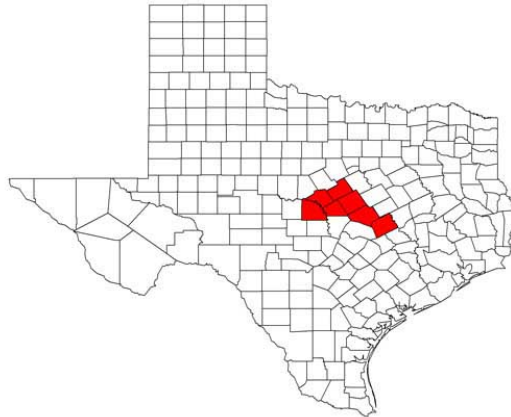
Updated Region
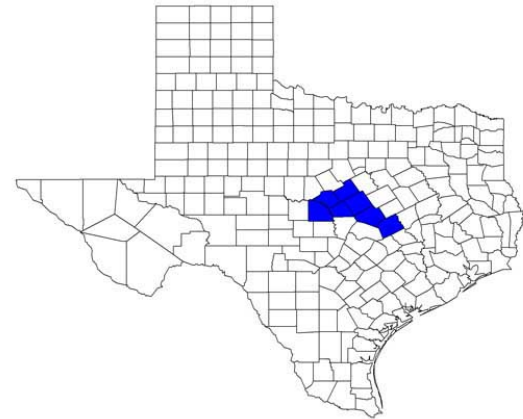
Current Region

Bell, Coryell, Hamilton, Lampasas, Milam, Mills, and San Saba

The proposed Central Texas Region is identical in composition to the current Central Texas COG. As noted earlier, the primary population center (the Killeen-Temple MSA) is a well-defined support base for the entire area. Moreover, the large health care complex and the presence of Fort Hood give the area a distinct business complex.

Region 10: Brazos Valley
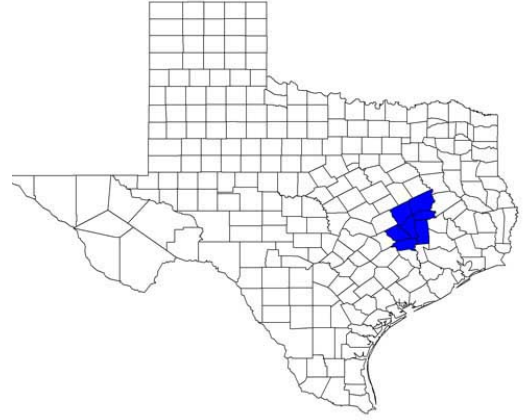
Updated Region   **Current Region**

Brazos, Burleson, Grimes, Leon,
Madison, Robertson, and Washington

The proposed Brazos Valley Region is conterminous to the current Brazos Valley COG. The College Station-Bryan metropolitan area exhibits the characteristics of a central city capable of meeting the retail, service, and support needs of the surrounding counties. The region is becoming increasingly interrelated with the economy of the Houston area, but remains a distinct region at this point.

Region 11: Capital
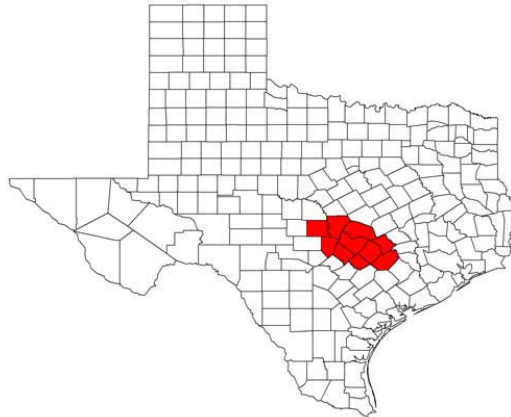
Updated Region

Current Region

Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson

The proposed Capital Region is comprised of the same counties as the current Capital COG Region. The Austin-Round Rock metropolitan area is rapidly expanding, and its boundaries have been extended significantly by the Census Bureau. In particular, Travis County is a substantial net exporter of a wide variety of goods and services. It is currently expected that the Capital Region will expand to other counties in the future, as its linkages with the surrounding area are exhibiting a definitively increasing trend.

38

Region 12: South East Texas
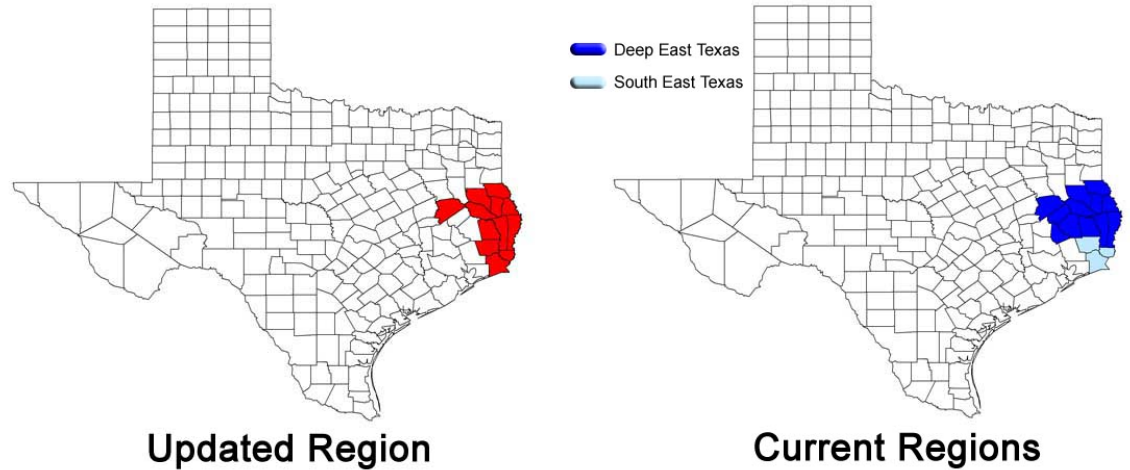
Updated Region

Deep East Texas
South East Texas

Current Regions

Angelina, Hardin, Houston, Jasper,
Jefferson, Nacogdoches, Newton,
Orange, Sabine, San Augustine,
Shelby, and Tyler

This proposed region is a combination of the current South East Texas COG (which is composed of the three counties—Hardin, Jefferson, and Orange—that make up the Beaumont-Port Arthur MSA) and a significant segment of the present Deep East Texas COG. Three counties from the Deep East Texas area—Polk, San Jacinto, and Trinity—were transferred to the Gulf Coast Region (see subsequent discussion). In addition, Jasper, Newton, and Tyler counties appear to be more directly and intensely linked to the Beaumont-Port Arthur area than other parts of the region. Several counties in the area have a significant timber industry presence which is widely dispersed, but is not of sufficient magnitude (less than 8% of the current Deep East Texas COG Region including forestry and wood processing) to constitute a separate region. Lufkin (Angelina County) and Nacogdoches (Nacogdoches County) continue to be the primary support centers for the timber industry.

Region 13: Gulf Coast
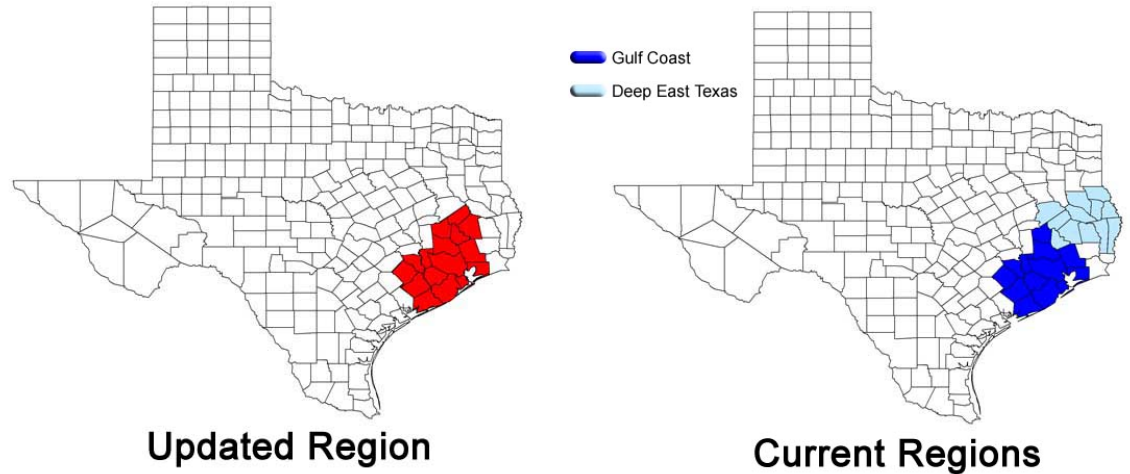
Updated Region

Current Regions

Legend:
- Gulf Coast
- Deep East Texas

Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Polk, San Jacinto, Trinity, Walker, Waller, and Wharton

The proposed Gulf Coast Region includes all of the counties in the current Gulf Coast COG Region, as well as Polk, San Jacinto, and Trinity counties from the current Deep East Texas COG. Like other large urban centers in the state, the Houston-Sugar Land-Baytown MSA is continuing to enlarge its sphere of influence. With expanding port activity, the recent increases in energy activity, and the rising importance of biotechnology, this region will likely expand further in the future.

Region 14: Coastal Bend
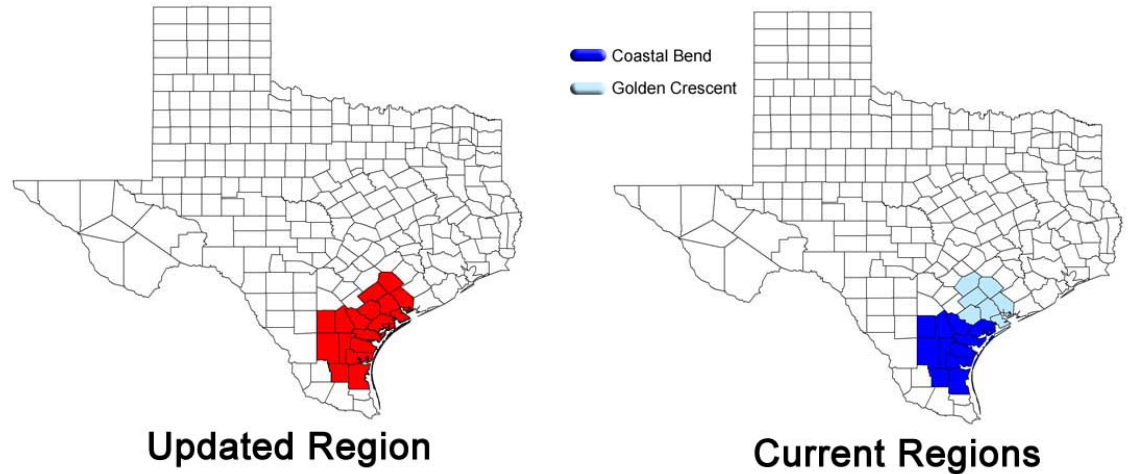
Updated Region

Current Regions

Coastal Bend
Golden Crescent

Aransas, Bee, Brooks, Calhoun, DeWitt, Duval, Goliad, Jackson, Jim Wells, Kenedy, Kleberg, Lavaca, Live Oak, McMullen, Nueces, Refugio, San Patricio, and Victoria

This proposed region clearly mirrors the current Golden Crescent COG and Coastal Bend COG regions, with the only exception being that Gonzales County has been moved to the Alamo region (see subsequent discussion). This area includes both the Victoria and Corpus Christi MSAs. The Golden Crescent COG Region constitutes only about 0.8% of the Texas population. Moreover, the petroleum and chemical industries in the region are becoming increasingly integrated. Additionally, several counties are exhibiting linkages to both urban areas, and the distinctions are blurred. The less populous counties in the area with substantial agricultural interests tend to rely on Corpus Christi for basic retail and service needs.

Region 15: Alamo
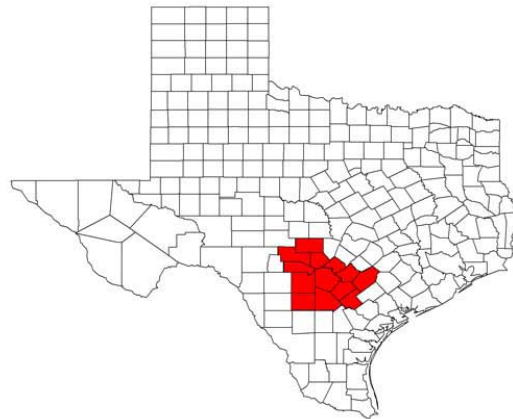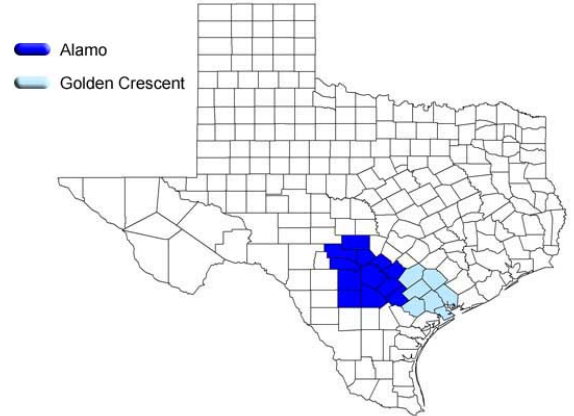
Atascosa, Bandera, Bexar, Comal, Frio, Gillespie, Gonzales, Guadalupe, Karnes, Kendall, Kerr, Medina, and Wilson

The proposed Alamo Region includes the current counties in the Alamo COG Region as well as Gonzales County. The area is dominated by the San Antonio MSA, which has been expanded over time by the Census Bureau. With the recent location of a major Toyota facility, the region has diversified its manufacturing base and established greater linkages with counties to the south (due in part to the location of numerous parts manufacturers in northern Mexico).

Region 16: South Texas

Updated Region
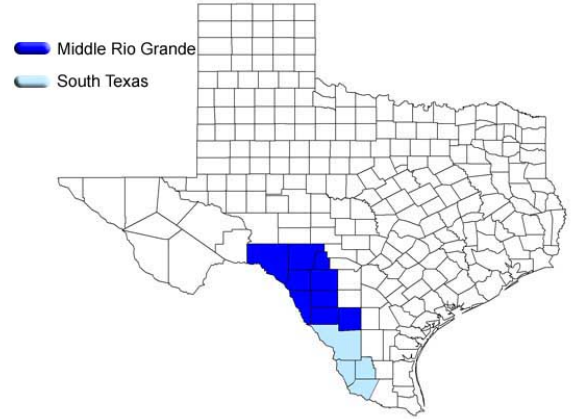
Current Regions

Middle Rio Grande
South Texas

Dimmitt, Edwards, Jim Hogg, Kinney, LaSalle, Maverick, Real, Uvalde, Val Verde, Webb, Zapata, and Zavala

This proposed region includes most of the current South Texas COG and Middle Rio Grande COG regions (the only exception being that Starr County has been moved to the Lower Rio Grande Region). The Middle Rio Grande region is less than 1% of the state population and economy and does not include a metropolitan area. Moreover, the larger cities in this area, such as Del Rio and Eagle Pass, are being increasingly integrated with Laredo and the overall economy of the border region. The sparsely populated agricultural counties in the area generally rely on the communities along the border for their support activity.

Region 17: Lower Rio Grande Valley

Updated Region

Current Regions
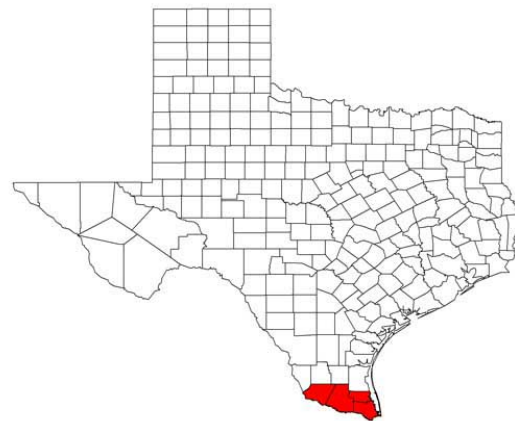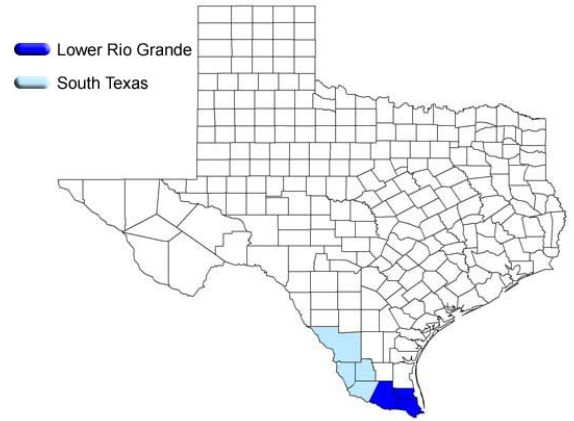
Legend:
- Lower Rio Grande
- South Texas

Cameron, Hidalgo, Starr, and Willacy

This region consists of Cameron, Hidalgo, and Willacy counties which are equivalent to the current Lower Rio Grande Valley COG plus the addition of Starr County. Starr County was included in this region because (1) it is a part of the Lower Rio Grande Workforce Development Area and (2) it was found to be significantly linked to the other Lower Rio Grande Valley counties (particularly to Hidalgo County). This area encompasses both the McAllen-Edinburg-Mission and Brownsville-Harlingen MSAs and is a major center of border trade and tourism activity. The metropolitan counties exhibit characteristics of significant centers of retail and service support for the surrounding area.

Potential Future Patterns

Obviously, forecasts of future regional linkages are subject to more uncertainty and lack of precision than analysis of current patterns. Myriad factors can affect the evolution of economic integration, none of which can be projected with perfect accuracy. Based on simulations of The Perryman Group's econometric model and past patterns, the most readily identifiable and probable outcome is the ongoing growth in the geographic dominance of the large urban centers. It is likely that the Dallas-Fort Worth Metroplex will continue to expand in all directions. This pattern may well be accelerated by the increasing role Tarrant County is playing as a center of support activity for the Barnett Shale natural gas formation, which is serving as a catalyst over and above traditional factors to integration of a large territory.

Similarly, the Gulf Coast Region is expected to further influence an increasing segment of southeast Texas and the coastal region. Global business integration is anticipated to lead to greater interaction among the ports along the coast, the petroleum-related industries are expected to continue their consolidation pattern, and the ongoing expansion in biomedicine may well forge closer relationships with Texas A&M University and the Brazos Valley Region (this process is already well underway).

The Capital and Alamo areas will sustain outward expansion and may well become more closely interrelated. It is widely expected that a "convergence" movement in nanoscale technologies will occur over the next two decades that could create additional

opportunities for cooperative endeavors over and above the ongoing growth that is tending to further link the two areas.

Thus, it is reasonable to expect that the large urban regions will expand over time and reduce the total number of distinct areas within the state. From an administrative perspective, this may create the need for subregions (similar to the individual county LWDAs). It may also be beneficial at some point to have specific programs for non-contiguous areas with similar needs that are more defined by functional requirements than geography (such as counties dominated by agricultural production).

As a final note, it is important to mention that, just as there are no "bright lines" over space, there are similarly no "bright lines" across time. In other words, changes will likely evolve, and there will not be a definitive moment when regional shifts occur (or at least when data is sufficient to reveal them). Thus, while it is probably not necessary to conduct an investigation of this nature on an annual basis, it is beneficial to periodically review various linkages and redefine appropriate areas.

Conclusion

This analysis has sought to provide a comprehensive assessment using various techniques of the regional economic patterns within Texas. While there are inevitably gray areas and subjective decisions in any such effort, the analysis has effectively identified a set of regions reflecting contemporary economic conditions and interactions.

While many legitimate considerations—economic and non-economic alike—determine the ultimate regions that are used for planning and program administration, the current investigation should provide a useful point of departure for fruitful consideration of potential future patterns.

Respectfully submitted,

M. Ray Perryman

M. Ray Perryman, PhD, President
The Perryman Group

APPENDICES

Appendix A

Texas Econometric Model Methodology

The Texas Econometric Model

Overview

As noted earlier, the baseline projections of current regional interactions and MSA performance used in this assessment are derived from the appropriate submodels of the Texas Econometric Model. The system was developed by TPG almost 30 years ago has been consistently maintained and updated since that time. It is formulated in an internally consistent manner and is designed to permit the integration of relevant global, national, state, and local factors into the projection process. It is the result of more than a quarter century of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, Texas, and regional economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations.

This section describes the forecasting process in a comprehensive manner, focusing on both the modeling and the supplemental analysis. The overall methodology, while certainly not ensuring perfect foresight, permits an enormous body of relevant information to impact the economic outlook in a systematic manner.

Model Logic and Structure

The Texas Econometric Model revolves around a core system which projects output (real and nominal), income (real and nominal), and employment by industry in a simultaneous manner. For purposes of illustration, it is useful to initially consider the employment functions. Essentially, employment within the system is a derived demand relationship obtained from a neo-Classical production function. The expressions are augmented to include dynamic temporal adjustments to changes in relative factor input costs, output and (implicitly) productivity, and technological progress over time. Thus, the typical equation includes output, the relative real cost of labor and capital, dynamic lag structures, and a technological adjustment parameter. The functional form is logarithmic, thus preserving the theoretical consistency with the neo-Classical formulation.

The income segment of the model is divided into wage and non-wage components. The wage equations, like their employment counterparts, are individually estimated at the 3-digit North American Industry Classification System (NAICS) level of aggregation. Hence, income by place of work is measured for approximately 90 production categories. The wage equations

measure real compensation, with the form of the variable structure differing between "basic" and "non-basic."

The basic industries, comprised primarily of the various components of Mining, Agriculture, and Manufacturing, are export-oriented, i.e., they bring external dollars into the area and form the core of the economy. The production of these sectors typically flows into national and international markets; hence, the labor markets are influenced by conditions in areas beyond the borders of the particular region. Thus, real (inflation-adjusted) wages in the basic industry are expressed as a function of the corresponding national rates, as well as measures of local labor market conditions (the reciprocal of the unemployment rate), dynamic adjustment parameters, and ongoing trends.

The "non-basic" sectors are somewhat different in nature, as the strength of their labor markets is linked to the health of the local export sectors. Consequently, wages in these industries are related to those in the basic segment of the economy. The relationship also includes the local labor market measures contained in the basic wage equations.

Note that compensation rates in the export or "basic" sectors provide a key element of the interaction of the regional economies with national and international market phenomena, while the "non-basic" or local industries are strongly impacted by area production levels. Given the wage and employment equations, multiplicative identities in each industry provide expressions for total compensation; these totals may then be aggregated to determine aggregate wage and salary income. Simple linkage equations are then estimated for the calculation of personal income by place of work.

The non-labor aspects of personal income are modeled at the regional level using straightforward empirical expressions relating to national performance, dynamic responses, and evolving temporal patterns. In some instances (such as dividends, rents, and others) national variables (for example, interest rates) directly enter the forecasting system. These factors have numerous other implicit linkages into the system resulting from their simultaneous interaction with other phenomena in national and international markets which are explicitly included in various expressions.

The output or gross area product expressions are also developed at the 3-digit NAICS level. Regional output for basic industries is linked to national performance in the relevant industries, local and national production in key related sectors, relative area and national labor costs in the industry, dynamic adjustment parameters, and ongoing changes in industrial interrelationships (driven by technological changes in production processes).

Output in the non-basic sectors is modeled as a function of basic production levels, output in related local support industries (if applicable), dynamic temporal adjustments, and ongoing patterns. The inter-industry linkages are obtained from the input-output (impact assessment) system which is part of the overall integrated modeling structure maintained by The Perryman Group. Note that the dominant component of the econometric system involves the simultaneous estimation and projection of output (real and nominal), income (real and nominal), and employment at a disaggregated industrial level. This process, of necessity, also produces projections of regional price deflators by industry. These values are affected by both national pricing patterns and local cost variations and permit changes in prices to impact other aspects of economic behavior. Income is converted from real to nominal terms using Texas Consumer Price Index, which fluctuates in response to national pricing patterns and unique local phenomena.

Several other components of the model are critical to the forecasting process. The demographic module includes (1) a linkage equation between wage and salary (establishment) employment and household employment, (2) a labor force participation rate function, and (3) a complete population system with endogenous migration. Given household employment, labor force participation (which is a function of economic conditions and evolving patterns of worker preferences), and the working age population, the unemployment rate and level become identities.

The population system uses Census information, fertility rates, and life tables to determine the "natural" changes in population by age group. Migration, the most difficult segment of population dynamics to track, is estimated in relation to relative regional and extra-regional economic conditions over time. Because evolving economic conditions determine migration in the system, population changes are allowed to interact simultaneously with overall economic conditions. Through this process, migration is treated as endogenous to the system, thus allowing population to vary in accordance with relative business performance (particularly employment).

Retail sales is related to income, interest rates, dynamic adjustments, and patterns in consumer behavior on a store group basis. Inflation at the state level relates to national patterns, indicators of relative economic conditions, and ongoing trends. As noted earlier, prices are endogenous to the system.

A final significant segment of the forecasting system relates to real estate absorption and activity. The short-term demand for various types of property is determined by underlying economic and demographic factors, with short-term adjustments to reflect the current status of the pertinent building cycle. In some instances, this portion of the forecast requires integration with the Multi-Regional Industry-Occupation System which is maintained by The Perryman Group.

The overall Texas Econometric Model contains numerous additional specifications, and individual expressions are modified to reflect alternative lag structures, empirical properties of the estimates, simulation requirements, and similar phenomena. Moreover, it is updated on an ongoing basis as new data releases become available. Nonetheless, the above synopsis offers a basic understanding of the overall structure and underlying logic of the system.

Model Simulation and Multi-Regional Structure

The initial phase of the simulation process is the execution of a standard non-linear algorithm for the state system and that of each of the individual sub-areas. The external assumptions are derived from scenarios developed through national and international models and extensive analysis by The Perryman Group. The US model, which follows the basic structure outlined above, was used to some extent in the current analysis to define the demand for domestically produced goods on a per capita basis.

Once the initial simulations are completed, they are merged into a single system with additive constraints and interregional flows. Using information on minimum regional requirements, import needs, export potential, and locations, it becomes possible to balance the various forecasts into a mathematically consistent set of results. This process is, in effect, a disciplining exercise with regard to the individual regional (including metropolitan and rural) systems. By compelling equilibrium across all regions and sectors, the algorithm ensures that the patterns in state activity are reasonable in light of smaller area dynamics and, conversely, that the regional outlooks are within plausible performance levels for the state as a whole.

The iterative simulation process has the additional property of imposing a global convergence criterion across the entire multi-regional system, with balance being achieved simultaneously on both a sectoral and a geographic basis. This approach is particularly critical on non-linear dynamic systems, as independent simulations of individual systems often yield unstable, non-convergent outcomes.

It should be noted that the underlying data for the modeling and simulation process are frequently updated and revised by the various public and private entities compiling them. Whenever those modifications to the database occur, they bring corresponding changes to the structural parameter estimates of the various systems and the solutions to the simulation and forecasting system. The multi-regional version of the Texas Econometric Model is re-estimated and simulated with each such data release, thus

providing a constantly evolving and current assessment of state and local business activity.

The Final Forecast

The process described above is followed to produce an initial set of projections. Through the comprehensive multi-regional modeling and simulation process, a systematic analysis is generated which accounts for both historical patterns in economic performance and inter-relationships and best available information on the future course of pertinent external factors. While the best available techniques and data are employed in this effort, they are not capable of directly capturing "street sense," i.e., the contemporaneous and often non-quantifiable information that can materially affect economic outcomes. In order to provide a comprehensive approach to the prediction of business conditions, it is necessary to compile and assimilate extensive material regarding current events and factors both across the state of Texas and elsewhere.

This critical aspect of the forecasting methodology includes activities such as (1) daily review of hundreds of financial and business publications and electronic information sites; (2) review of all major newspapers in the state on a daily basis; (3) dozens of hours of direct telephone interviews with key business and political leaders in all parts of the state; (4) face-to-face discussions with representatives of major industry groups; and (5) frequent site visits to the various regions of the state. The insights arising from this "fact finding" are analyzed and evaluated for their effects on the likely course of the future activity.

Another vital information resource stems from the firm's ongoing interaction with key players in the international, domestic, and state economic scenes. Such activities include visiting with corporate groups on a regular basis and being regularly involved in the policy process at all levels. The firm is also an active participant in many major corporate relocations, economic development initiatives, and regulatory proceedings.

Once organized, this information is carefully assessed and, when appropriate, independently verified. The impact on specific communities and sectors that is distinct from what is captured by the econometric system is then factored into the forecast analysis. For example, the opening or closing of a major facility, particularly in a relatively small area, can cause a sudden change in business performance that will not be accounted for by either a modeling system based on historical relationships or expected (primarily national and international) factors.

The final step in the forecasting process is the integration of this material into the results in a logical and mathematically consistent manner. In some instances, this task is accomplished through "constant adjustment factors" which augment relevant equations. In other cases, anticipated changes in industrial structure or regulatory parameters are initially simulated within the context of the Multi-Regional Impact Assessment System to estimate their ultimate effects by sector. Those findings are then factored into the simulation as constant adjustments on a distributed temporal basis. Once this scenario is formulated, the extended system is again balanced across regions and sectors through an iterative simulation algorithm analogous to that described in the preceding section.

Appendix B

US Multi-Regional Impact Assessment System

US Multi-Regional Impact Assessment System

Another basic modeling technique employed in this study is known as input-output analysis. This methodology essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.

There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated. The second step is the simulation of the input-output system to measure overall economic effects. In the case of a prospective evaluation, it is necessary to first calculate reasonable estimates of the direct activity.

Once the direct input values were determined, the present study was conducted within the context of the US Multi-Regional Impact Assessment System (USMRIAS) which was developed and is maintained by The Perryman Group. This model has been used in hundreds of diverse applications across the country and has an excellent reputation for accuracy and credibility. In addition, the model has been in operation and continually updated for over two decades. The systems used in the current simulations reflect the unique industrial structures of the economies of the state of Texas and the various counties and multi-county regions examined in the current endeavor. In the present instance, it was used to examine the same activity over increasingly larger areas to determine the extent of "spillover" activity and hence, integration.

The USMRIAS is somewhat similar in format to the Input-Output Model of the United States and the Regional Input-Output Modeling System, both of which are maintained by the US Department of Commerce. The model developed by TPG, however, incorporates several important enhancements and refinements. Specifically, the expanded system includes (1) comprehensive 500-sector coverage for any county, multi-county, or urban region; (2) calculation of both total expenditures and value-added by industry and region; (3) direct estimation of expenditures for multiple basic input choices (expenditures, output, income, or employment); (4) extensive parameter localization; (5) price adjustments for real and nominal assessments by sectors and areas; (6) measurement of the induced impacts associated with payrolls and consumer spending; (7) embedded modules to estimate multi-sectoral direct spending effects; (8) estimation of retail spending activity by consumers; and (9) comprehensive linkage and integration capabilities with a wide variety of

econometric, real estate, occupational, and fiscal impact models. The models used for the present investigation have been thoroughly tested for reasonableness and historical reliability.

As noted earlier, the impact assessment (input-output) process essentially estimates the amounts of all types of goods and services required to produce one unit (a dollar's worth) of a specific type of output. For purposes of illustrating the nature of the system, it is useful to think of inputs and outputs in dollar (rather than physical) terms. As an example, the construction of a new building will require specific dollar amounts of lumber, glass, concrete, hand tools, architectural services, interior design services, paint, plumbing, and numerous other elements. Each of these suppliers must, in turn, purchase additional dollar amounts of inputs. This process continues through multiple rounds of production, thus generating subsequent increments to business activity. The initial process of building the facility is known as the *direct effect*. The ensuing transactions in the output chain constitute the *indirect effect*.

Another pattern that arises in response to any direct economic activity comes from the payroll dollars received by employees at each stage of the production cycle. As workers are compensated, they use some of their income for taxes, savings, and purchases from external markets. A substantial portion, however, is spent locally on food, clothing, healthcare services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the *ACCRA Cost of Living Index*, a privately compiled inter-regional measure which has been widely used for several decades, and the *Consumer Expenditure Survey* of the US Department of Labor. These initial outlays by area residents generate further secondary activity as local providers acquire inputs to meet this consumer demand. These consumer spending impacts are known as the *induced effect*. The USMRIAS is designed to provide realistic, yet conservative, estimates of these phenomena.

Sources for information used in this process include the Bureau of the Census, the Bureau of Labor Statistics, the Regional Economic Information System of the US Department of Commerce, and other public and private sources. The pricing data are compiled from the US Department of Labor and the US Department of Commerce. The verification and testing procedures make use of extensive public and private sources. Note that all monetary values, unless otherwise noted, are given in constant (2007) dollars to eliminate the effects of inflation.

The USMRIAS generates estimates of the effect on several measures of business activity. The most comprehensive measure of economic activity used in this study is **Total Expenditures**. This measure incorporates every dollar that changes hands in any transaction. For example,

suppose a farmer sells wheat to a miller for $0.50; the miller then sells flour to a baker for $0.75; the baker, in turn, sells bread to a customer for $1.25. The Total Expenditures recorded in this instance would be $2.50, that is, $0.50 + $0.75 + $1.25. This measure is quite broad, but is useful in that (1) it reflects the overall interplay of all industries in the economy, and (2) some key fiscal variables such as sales taxes are linked to aggregate spending.

A second measure of business activity frequently employed in this analysis is that of **Gross Product**. This indicator represents the regional equivalent of Gross Domestic Product, the most commonly reported statistic regarding national economic performance. In other words, the Gross Product of, say, Amarillo is the amount of US output that is produced in that area. It is defined as the value of all final goods produced in a given region for a specific period of time. Stated differently, it captures the amount of value-added (gross area product) over intermediate goods and services at each stage of the production process, that is, it eliminates the double counting in the Total Expenditures concept. Using the example above, the Gross Product is $1.25 (the value of the bread) rather than $2.50. Alternatively, it may be viewed as the sum of the value-added by the farmer, $0.50; the miller, $0.25 ($0.75 - $0.50); and the baker, $0.50 ($1.25 - $0.75). The total value-added is, therefore, $1.25, which is equivalent to the final value of the bread. In many industries, the primary component of value-added is the wage and salary payments to employees.

The third gauge of economic activity used in this evaluation is **Personal Income**. As the name implies, Personal Income is simply the income received by individuals, whether in the form of wages, salaries, interest, dividends, proprietors' profits, or other sources. It may thus be viewed as the segment of overall impacts which flows directly to the citizenry.
The fourth measure, **Retail Sales**, represents the component of Total Expenditures which occurs in retail outlets (general merchandise stores, automobile dealers and service stations, building materials stores, food stores, drugstores, restaurants, and so forth). Retail Sales is a commonly used measure of consumer activity.

The final aggregates used are **Permanent Jobs and Person-Years of Employment**. The Person-Years of Employment measure reveals the full-time equivalent jobs generated by an activity. It should be noted that, unlike the dollar values described above, Permanent Jobs is a "stock" rather than a "flow." In other words, if an area produces $1 million in output in 1999 and $1 million in 2000, it is appropriate to say that $2 million was achieved in the 1999-2000 period. If the same area has 100 people working in 1999 and 100 in 2000, it only has 100 Permanent Jobs. When a flow of jobs is measured, such as in a construction project or a

cumulative assessment over multiple years, it is appropriate to measure employment in Person-Years (a person working for a year). This concept is distinct from Permanent Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

Appendix C

County Classification Table

County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
ANDERSON	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
ANDREWS	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
ANGELINA	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
ARANSAS	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	Corpus Christi MSA
ARCHER	North West Texas	Northwest Texas	North Texas	North Texas	Wichita Falls MSA
ARMSTRONG	Panhandle	High Plains	Panhandle	Panhandle	Amarillo MSA
ATASCOSA	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
AUSTIN	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
BAILEY	South Plains	High Plains	South Plains	South Plains	No MSA
BANDERA	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
BASTROP	Capital	Capital	Capital	Rural Capital	Austin-Round Rock MSA
BAYLOR	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
BEE	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
BELL	Central Texas	Central	Central Texas	Central Texas	Killeen-Temple-Fort Hood MSA
BEXAR	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
BLANCO	Capital	Capital	Capital	Rural Capital	No MSA
BORDEN	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
BOSQUE	Heart of Texas	Central	Heart of Texas	Heart of Texas	No MSA
BOWIE	North East Texas	Upper East Texas	North East Texas	North East	Texarkana MSA
BRAZORIA	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
BRAZOS	Brazos Valley	Central	Brazos Valley	Brazos Valley	College Station-Bryan MSA
BREWSTER	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	No MSA
BRISCOE	Panhandle	High Plains	Panhandle	Panhandle	No MSA
BROOKS	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
BROWN	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
BURLESON	Brazos Valley	Central	Brazos Valley	Brazos Valley	College Station-Bryan MSA
BURNET	Capital	Capital	Capital	Rural Capital	No MSA
CALDWELL	Capital	Capital	Capital	Rural Capital	Austin-Round Rock MSA
CALHOUN	Coastal Bend	Coastal Bend	Golden Crescent	Golden Crescent	Victoria MSA
CALLAHAN	North West Texas	Northwest Texas	West Central Texas	West Central	Abilene MSA
CAMERON	Lower Rio Grande Valley	South Texas Border	Lower Rio Grande Valley	Cameron County	Brownsville-Harlingen MSA
CAMP	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
CARSON	Panhandle	High Plains	Panhandle	Panhandle	Amarillo MSA
CASS	North East Texas	Upper East Texas	North East Texas	North East	No MSA
CASTRO	Panhandle	High Plains	Panhandle	Panhandle	No MSA
CHAMBERS	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
CHEROKEE	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
CHILDRESS	Panhandle	High Plains	Panhandle	Panhandle	No MSA
CLAY	North West Texas	Northwest Texas	North Texas	North Texas	Wichita Falls MSA
COCHRAN	South Plains	High Plains	South Plains	South Plains	No MSA
COKE	West Texas	West Texas	Concho Valley	Concho Valley	No MSA

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County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
COLEMAN	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
COLLIN	North Central Texas	Metroplex	North Central Texas	North Central	Dallas-Plano-Irving MD
COLLINGSWORTH	Panhandle	High Plains	Panhandle	Panhandle	No MSA
COLORADO	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	No MSA
COMAL	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
COMANCHE	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
CONCHO	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
COOKE	North Central Texas	Metroplex	Texoma	Texoma	No MSA
CORYELL	Central Texas	Central	Central Texas	Central Texas	Killeen-Temple-Fort Hood MSA
COTTLE	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
CRANE	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
CROCKETT	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
CROSBY	South Plains	High Plains	South Plains	South Plains	Lubbock MSA
CULBERSON	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	No MSA
DALLAM	Panhandle	High Plains	Panhandle	Panhandle	No MSA
DALLAS	North Central Texas	Metroplex	North Central Texas	Dallas	Dallas-Plano-Irving MD
DAWSON	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
DEAF SMITH	Panhandle	High Plains	Panhandle	Panhandle	No MSA
DELTA	North Central Texas	Upper East Texas	North East Texas	North East	Dallas-Plano-Irving MD
DENTON	North Central Texas	Metroplex	North Central Texas	North Central	Dallas-Plano-Irving MD
DE WITT	Coastal Bend	Coastal Bend	Golden Crescent	Golden Crescent	No MSA
DICKENS	South Plains	High Plains	South Plains	South Plains	No MSA
DIMMIT	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
DONLEY	Panhandle	High Plains	Panhandle	Panhandle	No MSA
DUVAL	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
EASTLAND	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
ECTOR	West Texas	West Texas	Permian Basin	Permian Basin	Odessa MSA
EDWARDS	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
ELLIS	North Central Texas	Metroplex	North Central Texas	North Central	Dallas-Plano-Irving MD
EL PASO	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	El Paso MSA
ERATH	North Central Texas	Metroplex	North Central Texas	North Central	No MSA
FALLS	Heart of Texas	Central	Heart of Texas	Heart of Texas	No MSA
FANNIN	North Central Texas	Metroplex	Texoma	Texoma	No MSA
FAYETTE	Capital	Capital	Capital	Rural Capital	No MSA
FISHER	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
FLOYD	South Plains	High Plains	South Plains	South Plains	No MSA
FOARD	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
FORT BEND	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
FRANKLIN	North East Texas	Upper East Texas	North East Texas	North East	No MSA
FREESTONE	Heart of Texas	Central	Heart of Texas	Heart of Texas	No MSA
FRIO	Alamo	Alamo	Alamo	Alamo	No MSA

County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
GAINES	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
GALVESTON	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
GARZA	South Plains	High Plains	South Plains	South Plains	No MSA
GILLESPIE	Alamo	Alamo	Alamo	Alamo	No MSA
GLASSCOCK	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
GOLIAD	Coastal Bend	Coastal Bend	Golden Crescent	Golden Crescent	Victoria MSA
GONZALES	Alamo	Coastal Bend	Golden Crescent	Golden Crescent	No MSA
GRAY	Panhandle	High Plains	Panhandle	Panhandle	No MSA
GRAYSON	North Central Texas	Metroplex	Texoma	Texoma	Sherman-Denison MSA
GREGG	North East Texas	Upper East Texas	East Texas	East Texas	Longview MSA
GRIMES	Brazos Valley	Central	Brazos Valley	Brazos Valley	No MSA
GUADALUPE	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
HALE	South Plains	High Plains	South Plains	South Plains	No MSA
HALL	Panhandle	High Plains	Panhandle	Panhandle	No MSA
HAMILTON	Central Texas	Central	Central Texas	Central Texas	No MSA
HANSFORD	Panhandle	High Plains	Panhandle	Panhandle	No MSA
HARDEMAN	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
HARDIN	South East Texas	Southeast Texas	South East Texas	South East Texas	Beaumont-Port Arthur MSA
HARRIS	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
HARRISON	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
HARTLEY	Panhandle	High Plains	Panhandle	Panhandle	No MSA
HASKELL	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
HAYS	Capital	Capital	Capital	Rural Capital	Austin-Round Rock MSA
HEMPHILL	Panhandle	High Plains	Panhandle	Panhandle	No MSA
HENDERSON	North Central Texas	Upper East Texas	East Texas	East Texas	No MSA
HIDALGO	Lower Rio Grande Valley	South Texas Border	Lower Rio Grande Valley	Lower Rio Grande Valley	McAllen-Edinburg-Mission MSA
HILL	North Central Texas	Central	Heart of Texas	Heart of Texas	No MSA
HOCKLEY	South Plains	High Plains	South Plains	South Plains	No MSA
HOOD	North Central Texas	Metroplex	North Central Texas	North Central	No MSA
HOPKINS	North East Texas	Upper East Texas	North East Texas	North East	No MSA
HOUSTON	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
HOWARD	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
HUDSPETH	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	No MSA
HUNT	North Central Texas	Metroplex	North Central Texas	North Central	Dallas-Plano-Irving MD
HUTCHINSON	Panhandle	High Plains	Panhandle	Panhandle	No MSA
IRION	West Texas	West Texas	Concho Valley	Concho Valley	San Angelo MSA
JACK	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
JACKSON	Coastal Bend	Coastal Bend	Golden Crescent	Golden Crescent	No MSA
JASPER	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
JEFF DAVIS	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	No MSA
JEFFERSON	South East Texas	Southeast Texas	South East Texas	South East Texas	Beaumont-Port Arthur MSA

County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
JIM HOGG	South Texas	South Texas Border	South Texas	South Texas	No MSA
JIM WELLS	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
JOHNSON	North Central Texas	Metroplex	North Central Texas	North Central	Fort Worth-Arlington MD
JONES	North West Texas	Northwest Texas	West Central Texas	West Central	Abilene MSA
KARNES	Alamo	Alamo	Alamo	Alamo	No MSA
KAUFMAN	North Central Texas	Metroplex	North Central Texas	North Central	Dallas-Plano-Irving MD
KENDALL	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
KENEDY	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
KENT	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
KERR	Alamo	Alamo	Alamo	Alamo	No MSA
KIMBLE	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
KING	South Plains	High Plains	South Plains	South Plains	No MSA
KINNEY	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
KLEBERG	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
KNOX	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
LAMAR	North East Texas	Upper East Texas	North East Texas	North East	No MSA
LAMB	South Plains	High Plains	South Plains	South Plains	No MSA
LAMPASAS	Central Texas	Central	Central Texas	Central Texas	Killeen-Temple-Fort Hood MSA
LA SALLE	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
LAVACA	Coastal Bend	Coastal Bend	Golden Crescent	Golden Crescent	No MSA
LEE	Capital	Capital	Capital	Rural Capital	No MSA
LEON	Brazos Valley	Central	Brazos Valley	Brazos Valley	No MSA
LIBERTY	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
LIMESTONE	Heart of Texas	Central	Heart of Texas	Heart of Texas	No MSA
LIPSCOMB	Panhandle	High Plains	Panhandle	Panhandle	No MSA
LIVE OAK	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
LLANO	Capital	Capital	Capital	Rural Capital	No MSA
LOVING	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
LUBBOCK	South Plains	High Plains	South Plains	South Plains	Lubbock MSA
LYNN	South Plains	High Plains	South Plains	South Plains	No MSA
MADISON	Brazos Valley	Central	Brazos Valley	Brazos Valley	No MSA
MARION	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
MARTIN	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
MASON	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
MATAGORDA	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	No MSA
MAVERICK	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
MCCULLOCH	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
MCLENNAN	Heart of Texas	Central	Heart of Texas	Heart of Texas	Waco MSA
MCMULLEN	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
MEDINA	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
MENARD	West Texas	West Texas	Concho Valley	Concho Valley	No MSA

County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
MIDLAND	West Texas	West Texas	Permian Basin	Permian Basin	Midland MSA
MILAM	Central Texas	Central	Central Texas	Central Texas	No MSA
MILLS	Central Texas	Central	Central Texas	Central Texas	No MSA
MITCHELL	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
MONTAGUE	North Central Texas	Northwest Texas	North Texas	North Texas	No MSA
MONTGOMERY	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
MOORE	Panhandle	High Plains	Panhandle	Panhandle	No MSA
MORRIS	North East Texas	Upper East Texas	North East Texas	North East	No MSA
MOTLEY	South Plains	High Plains	South Plains	South Plains	No MSA
NACOGDOCHES	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
NAVARRO	North Central Texas	Metroplex	North Central Texas	North Central	No MSA
NEWTON	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
NOLAN	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
NUECES	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	Corpus Christi MSA
OCHILTREE	Panhandle	High Plains	Panhandle	Panhandle	No MSA
OLDHAM	Panhandle	High Plains	Panhandle	Panhandle	No MSA
ORANGE	South East Texas	Southeast Texas	South East Texas	South East Texas	Beaumont-Port Arthur MSA
PALO PINTO	North Central Texas	Metroplex	North Central Texas	North Central	No MSA
PANOLA	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
PARKER	North Central Texas	Metroplex	North Central Texas	North Central	Fort Worth-Arlington MD
PARMER	Panhandle	High Plains	Panhandle	Panhandle	No MSA
PECOS	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
POLK	Gulf Coast	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
POTTER	Panhandle	High Plains	Panhandle	Panhandle	Amarillo MSA
PRESIDIO	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	Upper Rio Grande	No MSA
RAINS	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
RANDALL	Panhandle	High Plains	Panhandle	Panhandle	Amarillo MSA
REAGAN	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
REAL	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
RED RIVER	North East Texas	Upper East Texas	North East Texas	North East	No MSA
REEVES	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
REFUGIO	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	No MSA
ROBERTS	Panhandle	High Plains	Panhandle	Panhandle	No MSA
ROBERTSON	Brazos Valley	Central	Brazos Valley	Brazos Valley	College Station-Bryan MSA
ROCKWALL	North Central Texas	Metroplex	North Central Texas	North Central	Dallas-Plano-Irving MD
RUNNELS	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
RUSK	North East Texas	Upper East Texas	East Texas	East Texas	Longview MSA
SABINE	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
SAN AUGUSTINE	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
SAN JACINTO	Gulf Coast	Southeast Texas	Deep East Texas	Deep East Texas	Houston-Sugar Land-Baytown MSA
SAN PATRICIO	Coastal Bend	Coastal Bend	Coastal Bend	Coastal Bend	Corpus Christi MSA

County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
SAN SABA	Central Texas	Central	Central Texas	Central Texas	No MSA
SCHLEICHER	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
SCURRY	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
SHACKELFORD	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
SHELBY	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
SHERMAN	Panhandle	High Plains	Panhandle	Panhandle	No MSA
SMITH	North East Texas	Upper East Texas	East Texas	East Texas	Tyler MSA
SOMERVELL	North Central Texas	Metroplex	North Central Texas	North Central	No MSA
STARR	Lower Rio Grande Valley	South Texas Border	South Texas	Lower Rio Grande Valley	No MSA
STEPHENS	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
STERLING	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
STONEWALL	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
SUTTON	West Texas	West Texas	Concho Valley	Concho Valley	No MSA
SWISHER	Panhandle	High Plains	Panhandle	Panhandle	No MSA
TARRANT	North Central Texas	Metroplex	North Central Texas	Tarrant	Fort Worth-Arlington MD
TAYLOR	North West Texas	Northwest Texas	West Central Texas	West Central	Abilene MSA
TERRELL	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
TERRY	South Plains	High Plains	South Plains	South Plains	No MSA
THROCKMORTON	North West Texas	Northwest Texas	West Central Texas	West Central	No MSA
TITUS	North East Texas	Upper East Texas	North East Texas	North East	No MSA
TOM GREEN	West Texas	West Texas	Concho Valley	Concho Valley	San Angelo MSA
TRAVIS	Capital	Capital	Capital	Capital Area	Austin-Round Rock MSA
TRINITY	Gulf Coast	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
TYLER	South East Texas	Southeast Texas	Deep East Texas	Deep East Texas	No MSA
UPSHUR	North East Texas	Upper East Texas	East Texas	East Texas	Longview MSA
UPTON	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
UVALDE	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
VAL VERDE	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA
VAN ZANDT	North Central Texas	Upper East Texas	East Texas	East Texas	No MSA
VICTORIA	Coastal Bend	Coastal Bend	Golden Crescent	Golden Crescent	Victoria MSA
WALKER	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	No MSA
WALLER	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	Houston-Sugar Land-Baytown MSA
WARD	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
WASHINGTON	Brazos Valley	Central	Brazos Valley	Brazos Valley	No MSA
WEBB	South Texas	South Texas Border	South Texas	South Texas	Laredo MSA
WHARTON	Gulf Coast	Gulf Coast	Gulf Coast	Gulf Coast	No MSA
WHEELER	Panhandle	High Plains	Panhandle	Panhandle	No MSA
WICHITA	North West Texas	Northwest Texas	North Texas	North Texas	Wichita Falls MSA
WILBARGER	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
WILLACY	Lower Rio Grande Valley	South Texas Border	Lower Rio Grande Valley	Lower Rio Grande Valley	No MSA
WILLIAMSON	Capital	Capital	Capital	Rural Capital	Austin-Round Rock MSA

County Name	Proposed Economic Region	Comptroller Region Name	COG Name	LWDA Name	MSA/MD Name
WILSON	Alamo	Alamo	Alamo	Alamo	San Antonio MSA
WINKLER	West Texas	West Texas	Permian Basin	Permian Basin	No MSA
WISE	North Central Texas	Metroplex	North Central Texas	North Central	Fort Worth-Arlington MD
WOOD	North East Texas	Upper East Texas	East Texas	East Texas	No MSA
YOAKUM	South Plains	High Plains	South Plains	South Plains	No MSA
YOUNG	North West Texas	Northwest Texas	North Texas	North Texas	No MSA
ZAPATA	South Texas	South Texas Border	South Texas	South Texas	No MSA
ZAVALA	South Texas	South Texas Border	Middle Rio Grande	Middle Rio Grande	No MSA